CLAIMS

What is claimed is:

1. A MEMS device, comprising:

a deformable plate; and

a first actuator mounted on the deformable plate and adapted to apply a deformation force to the deformable plate to change the shape of the plate.

2. The device of claim 1, wherein the first actuator comprises first and second electrodes mounted on the deformable plate, wherein, when a voltage differential is applied between the first and second electrodes, one of the electrodes moves with respect to the other electrode thereby applying the deformation force to the plate.

3. The device of claim 1, wherein the first actuator comprises:

a first electrode having first and second ends, wherein the first end is attached to the plate; and

a second electrode attached to the plate, wherein:

the second end of the first electrode is movable with respect to the second electrode; and

when a voltage differential is applied between the first and second electrodes, the second end moves with respect to the second electrode thereby applying the deformation force to the plate.

4. The device of claim 3, wherein the first actuator comprises a plurality of first electrodes and a corresponding plurality of second electrodes.

5. The device of claim 4, wherein the pluralities of first and second electrodes are adapted to impart a two-dimensional curvature pattern onto the deformable plate.

6. The device of claim 3, wherein:

the first end of the first electrode is attached to a support beam extending along an edge of the plate; and

the second electrode is attached to an interior portion of the plate.

7. The device of claim 3, wherein, when the plate is not deformed, the first and second electrodes extend substantially parallel to a surface of the plate such that a gap between the surface and the first electrode is different from a gap between the surface and the second electrode.

8. The device of claim 7, wherein the second electrode is mounted on a spacer such that the gap between the surface and the second electrode is greater than the gap between the surface and the first electrode.

9. The device of claim 1, further comprising a substrate, wherein the plate is movably connected to the substrate.

10. The device of claim 9, wherein, when the plate moves with respect to the substrate, the first actuator moves together with the plate.

11. The device of claim 9, further comprising a second actuator adapted to move the plate with respect to the substrate.

12. The device of claim 11, wherein the second actuator comprises:

a third electrode attached to the plate, and

a fourth electrode mounted on the substrate, wherein, when a voltage differential is applied between the third and fourth electrodes, the third electrode moves with respect to the fourth electrode thereby rotating the plate.

13. The device of claim 11, wherein motion imparted onto the plate by the second actuator is substantially decoupled from deformation imparted onto the plate by the first actuator.

14. The device of claim 1, wherein the plate has a reflective surface.

15. The device of claim 1, wherein the device is part of a dispersion compensator.

16. A method of deforming a plate in a MEMS device, comprising:

applying to the plate a deformation force produced by a first actuator mounted on the plate and adapted to change the shape of the plate.

17. The method of claim 16, wherein the first actuator comprises first and second electrodes mounted on the plate, wherein, when a voltage differential is applied between the first and second electrodes, the electrodes move with respect to each other thereby generating the deformation force.

18. The method of claim 16, wherein:

the first actuator comprises:

a first electrode having first and second ends, wherein the first end is attached to the plate; and

a second electrode attached to the plate, wherein the second end of the first electrode is movable with respect to the second electrode; and

the method comprises:

applying a voltage differential between the first and second electrodes, wherein the second end of the first electrode moves with respect to the second electrode thereby applying the deformation force to the plate.

19. The method of claim 16, wherein the plate is movably connected to a substrate.

20. The method of claim 19, wherein, when the plate moves with respect to the substrate, the first actuator moves together with the plate.

21. The method of claim 19, further comprising moving the plate with respect to the substrate using a second actuator.

22. The method of claim 21, wherein:

the second actuator comprises:

a third electrode attached to the plate, and

a fourth electrode mounted on the substrate; and

the method comprises:

applying a voltage differential between the third and fourth electrodes, wherein the third electrode moves with respect to the fourth electrode thereby rotating the plate.

23. The method of claim 21, wherein motion imparted onto the plate by the second actuator is substantially decoupled from deformation imparted onto the plate by the first actuator.

24. A MEMS device, comprising:

a deformable plate movably connected to a substrate; and

a deformation actuator mounted on the deformable plate, wherein, when the plate adopts a shape and moves with respect to the substrate without a change of the adopted shape, the actuator moves together with the plate without a change in a deformation force applied to the plate by said deformation actuator.

25. The device of claim 24, wherein the deformable plate is adapted to rotate with respect to the substrate.

26. A MEMS device, comprising:

a deformable plate movably supported on a substrate;

means for moving the deformable plate with respect to the substrate; and

means for deforming the plate mounted on said plate, wherein, when the deformable plate adopts a shape and moves with respect to the substrate without a change of the adopted shape, the means for deforming the plate moves together with the plate without a change in a deformation force applied to the plate by said means for deforming.

27. A MEMS device, comprising:

a deformable plate rotatably supported on a substrate;

an actuator adapted for deforming said plate, wherein deformation of said plate is independent of any rotation of said plate.